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ABSTRACT

A study investigated the relative importance of certain college attributes to the freshmen of Ashland University, a small, private univeristy in Ohio. Five institutional characteristics were examined: availability and variety of financial aid, dorm life (living conditions and food quality), quality of education (quality of teaching, career relevance of the curriculum, and overall institutional reputation), student-faculty relationships and interaction (availability of faculty to students, faculty promotion of student development, and degree of faculty advice given to students on personal as well as academic matters), and campus social life. Conjoint analyses were conducted on the completed survey forms of 295 freshmen out of 318 administered the questionnaire. The student sample was segmented by gender participation or nonparticipation in sports, and degree of parental influence in college choice. Financial aid and quality of dorm life were the found to be the most important attributes overall, with educational quality, social life, and student faculty relationships rated in declining order of importance. Varying attribute rankings were found for the different student segments, with financial aid ranking first most often. Implications for college administration and future research are discussed. The questionnaire is appended. Contains 19 references. (MSE)

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Student Perceptions of the Relative Importance of Selected Attributes of an Institution of Higher Education: A Conjoint Approach

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Student Perceptions of the Relative Importance of Selected Attributes of an Institution of Higher Education: A Conjoint Approach

Abstract

Conjoint analyses were conducted on the freshman class of a small, private university in the Mid-West to determine the relative importance of financial aid in the rating of universities by students. Five attributes associated with the salient dimensions of institutions of higher education were included in the analyses: financial aid, dorm life, quality of education, student/faculty relationships and interaction, and social life. When selected segments of students evaluated various attributes of higher education, financial aid was generally found to be the most important attribute in the selection of a college by a student.

INTRODUCTION

It is clear that major challenges are confronting the administrators of colleges and universities. Declining enrollments and reductions in funding from public and private sources are two trends that are troublesome and perplexing. As a result, a new vernacular is gaining a foothold in the hallowed hallways of academe--market audits, strategic planning, retention marketing and trade-off analysis--to name a few.

The use of marketing techniques among college and university administrators is not new (Smith & Cavusgil, 1984; Litten, 1980, 1982; and Litten & Brodigan, 1982). It must be noted, however, that a renewed surge of "market orientedness" is taking shape. Kotler and Fox (1985) have outlined a comprehensive marketing approach in their text. Boyer (1987) has published information on how to "explore" an institution of higher learning from the consumer perspective. Various issues of Money (Topolnicki, 1984; Stickney, 1986), as well as Federal Government publications

(Consortium on Financing Higher Education, 1986), have also addressed the selection of colleges and universities from the consumer perspective. It is clear that consumers are seeking value for their dollars spent in obtaining a university degree.

Statement of the Problem

The administrative challenge is clear; more attention needs to be directed to the "consumers" of university services. The students themselves must be given an opportunity to express their thoughts, feelings, and/or satisfactions regarding their institution and its programs and services. Marketing research and specific evaluative research techniques borrowed from commercial applications can be used to glean useful insights.

Although conjoint analysis has been used extensively in commercial applications (Cattin and Wittink, 1982), it has seldom been applied to non-commercial situations such as institutions of higher education. This study focused on the use of conjoint analysis to evaluate student reactions to various attributes of institutions of higher education. Conjoint analysis is deemed useful for this particular application because the student considers a number of attributes when selecting a university. If the conjoint analyses are able to identify those attributes most important to students, the results could assist in the development and implementation of an effective recruiting marketing strategy by the university.

METHODOLOGY

Research Instrument

The research interest of this study is focused on five institutional attributes purported to be of significance to students who have matriculated to Ashland University. This list of attributes was developed through literature reviews (Tierney, 1980; Traynor, 1981; Kuh & Coomes, 1984; Conant, Brown & Mokwa, 1985), discussion with program advisors and students, and from the past experiences of admissions recruiters. The attributes selected for inclusion in the study were: financial aid, social life, quality of dorm life, student-faculty relationships, and quality of education. Special interest was directed towards financial aid since the administration of Ashland University was debating the relative impact of that attribute on a student's choice of which university to attend.

To determine the relative importance of these five attributes, a research instrument was designed to provide information that would lend itself to conjoint analysis. Brief descriptions of the attributes were provided on the survey instrument to ensure a better understanding by the students of what items were to be considered under each attribute (see Appendix A).

In the financial aid attribute the students were instructed to consider the various grants, loans, scholarships, and work-study programs available to assist students in covering the costs of attending college. Dorm life referred to the dormitory living

conditions and the quality of food in the cafeteria. In the category entitled quality of education the students were to include the quality of teaching, career relevance of the curriculum, and general overall reputation of the university. The student/faculty relationships attribute involved the availability of faculty to students, the faculty promotion of student development, and degree of faculty advice given to students on personal as well as professional matters. The social life attribute referred to the opportunity to meet and interact with other students on campus through various social mixers, dances, and other activities.

Each of the five attributes consisted of two levels that were assigned a value of 0 or 1 in order to allow the researchers to quantitatively form hypothetical universities with various combinations of attribute levels. The attributes, levels, and values assigned to each level were:

1. Quality of education
    a) reputation is not well known = 0
    b) reputation is well known = 1
2. Student/Faculty relationships
    a) faculty are acccessible if sought = 0
    b) faculty are extremely accessible = 1
3. Quality of dorm life
    a) below my expectations = 0
    b) above my expectations = 1

4. Financial aid

   a) little financial need is met = 0

   b) most financial need is met = 1

5. Social life

   a) few social activities are available = 0

   b) many social activities are available = 1

Five attributes with two levels each would allow 32 different university profiles to be formed. With the assumption that interaction effects were negligible, only eight orthogonal arrays were required to estimate the main effects. The eight orthogonal arrays used in this study were formed with the aid of the computer software entitled Conjoint Designer (Bretton-Clark, 1987), (see Table 1).

In addition to the eight orthogonal arrays, two arrays were designed to provide a means of assessing the ability of the utility functions generated by the conjoint analyses to predict student ratings of the various hypothetical universities. Since these two arrays were not included in the calculations of the utility functions, they were referred to as holdout universities. See Table 1 for the attributes of the holdout universities.

The students were asked to rate on a scale ranging from 1 to 10 each of the ten universities represented by the arrays. A value of 1 indicated that the student's preference level was very low; and a rating of 10 means that the university was highly preferred.

The first eight arrays were used to estimate the utility function for each student in the study. The resulting utility

Table 1

Orthogonal Arrays
Used for Conjoint Analysis

Universities	Quality of Education	Student/Faculty Relationships	Quality of Dorm Life	Financial Aid	Social Life
A	0	0	0	0	0
B	1	0	0	1	1
C	1	1	1	1	0
D	0	1	1	0	1
E	0	1	0	1	0
F	1	1	0	0	1
G	1	0	1	0	0
H	0	0	1	1	1
Holdout Universities					
I	1	1	1	0	1
J	1	1	0	1	0

Each characteristic is composed of two levels. The zero value indicates the presence of the lower of the two levels.

functions were then used to establish the students' predicted ratings for each of the two holdout universities. The observed and predicted ratings for the holdout universities were used to provide two estimates of the ability of the calculated utility function to predict student ratings: a) the absolute average difference between the predict and observed ratings, and b) the correlation coefficient for the predicted and observed ratings. The lower the value of absolute average difference and the higher the value of the correlation coefficient, the better the generated utility function was able to predict student ratings of the various universities.

Sample Disposition and Data Collection

The questionnaire was administered during the second week of the fall term of 1987 to 318 freshman students enrolled in the freshman seminar course. A total of 295 completed survey forms were deemed usable. A conjoint analysis was completed on the responses from the 295 survey forms. The results of the conjoint analysis were used to further edit the 295 responses by determining the consistency of the responses. In order to determine the degree of consistency of the responses, the researchers assumed that a student would prefer the level assigned a value of one over the level assigned a value of zero for each of the five attributes. To illustrate, it was assumed that a respondent would indicate that he/she would prefer "most need being met" (level assigned a value of 1) over "some need being met" (level assigned a value of 0) for the financial aid attribute. When a student reversed the levels of

an attribute, the sign of the ordinary least squares regression coefficient value generated by the conjoint analysis for that attribute was negative. If the signs of more than two regression coefficients for a given student were negative, the student's responses were reviewed. A total of 23 students were deemed to contain inconsistent responses, and their information was eliminated from the conjoint analyses reported in this study.

The final editing process involved reviewing the responses of five students who appeared to reverse the 1 to 10 scale. Each of the five students apparently assumed that 1 meant very desirable and 10 meant undesirable. The ratings for the five students were reversed, and their responses were included in the analyses. After the data editing process had been completed, the total sample used in the conjoint analyses consisted of 272 students.

Analyses

In the conjoint analyses, which were conducted by the computer software Conjoint Analyzer (Bretton-Clark, 1987), regression coeffients were generated for each student for each attribute. Thus, 272 regression coefficients were calculated for each of the five attributes. A regression coefficient value for a given attribute for a given student indicated what would happen to the rating of a university if the attribute changed from the "zero" level to the "one" level. To illustrate, assume that the financial aid regression coefficient for respondent 1 was 2.0. If financial aid were to increase from "little need being met" to "most need being met," and no other changes were made in the levels of the

other attributes, the student's rating of that university would increase by 2.0 points on the 1 to 10 scale.

In order to determine the relative impact of each of the five attributes on the student ratings, a pooled value of each attribute's regression coefficients was calculated. The pooled value for a given attribute was formed by averaging the 272 regression coefficients generated for that attribute. Each of the five average regression coefficients was then divided by the sum of the five average regression coefficients to form a relative importance figure. The five relative importance figures were expressed as percentages.

In addition to analyzing the relative importance figures of the five attributes for the entire sample, the same analysis was conducted for various segments of the sample. The sample was segmented in three ways: 1) male and female, 2) students who participated in intercollegiate sports and students who did not participate in intercollegiate sports, and 3) students whose degrees of parental influence on college selection were judged by the students to be low, moderate, and high. The information used to place students into the various categories was obtained from the students' survey sheets. With regard to the degree of parental influence, the students rated on a scale ranging from 1 to 10 the degree of influence they believed their parents had on their selection of a university. Students who assigned numbers from 1 to 3, 4 to 7, 8 to 10, were placed in the categories of low, moderate, and high parental influence, respectively.

Results

The conjoint analysis of the total sample, which is presented in Table 2, indicated that financial aid was the most important characteristic in selecting a university. The relative importance figure was 25.33%. Financial aid was followed in importance by quality of dorm life (23.48%), quality of education (19.38%), social life (16.74%) and student/faculty relationships (15.08%). The correlation coefficient and the absolute average difference value between the predicted values and observed values for the two holdout universities were .43 and 1.47, respectively.

When the sample was segmented by gender, financial aid and quality of dorm life comprised the most important set of attributes for both the male and female students. However, as indicated in Tables 3 and 4, male students placed slightly more importance on the quality of dorm life (25.77%) than financial aid (24.86%); the female students placed the most importance on financial aid (26.22%) and a lesser degree of importance on quality of dorm life (21.84%). The correlation coefficients and the absolute average difference values for both males and females were similar to the corresponding values obtained for the total sample (see Tables 3 and 4).

The results of the conjoint analyses of the sample segmented by students who participate in sports and students who do not participate in sports indicated that each group placed the most importance on the attributes of financial aid and quality of dorm life. The results contained in Tables 5 and 6 indicate that for

Table 2

Conjoint Analysis for Total Sample

Characteristic	Average Regression Coefficient	% of Relative Importance	Rank
Financial Aid	1.713	25.33	1
Quality of Dorm Life	1.588	23.48	2
Quality of Education	1.311	19.38	3
Social Life	1.132	16.74	4
Student/Faculty Relationships	1.020	15.08	5

n = 272
Correlation coefficient value between observed and predicted scores = .43
Absolute Average Difference = 1.47

Table 3

Conjoint Analysis for Males

Characteristic	Average Regression Coefficient	% of Relative Importance	Rank
Quality of Dorm Life	1.702	25.77	1
Financial Aid	1.643	24.86	2
Quality of Education	1.234	18.68	3
Social Life	1.155	17.48	4
Student/Faculty Relationships	0.873	13.21	5

n = 126
Correlation coefficient value between observed and predicted scores = .42
Absolute Average Difference = 1.51

Table 4

Conjoint Analysis for Females

Characteristic	Average Regression Coefficient	% of Relative Importance	Rank
Financial Aid	1.832	26.22	1
Quality of Dorm Life	1.526	21.84	2
Quality of Education	1.386	19.84	3
Student/Faculty Relationships	1.128	16.14	4
Social Life	1.114	15.95	5

n = 146
Correlation coefficient value between observed and predicted scores = .44
Absolute Average Difference = 1.42

Table 5

Conjoint Analysis for Participants in Sports

Characteristic	Average Regression Coefficient	% of Relative in Sports	Rank
Financial Aid	1.683	25.68	1
Quality of Dorm Life	1.552	23.69	2
Quality of Education	1.216	18.56	3
Social Life	1.209	18.45	4
Student/Faculty Relationships	0.892	13.61	5

n = 134
Correlation coefficient value between observed and predicted scores = .43
Absolute Average Difference = 1.50

Table 6

Conjoint Analysis for Nonparticipants in Sports

Characteristic	Average Regression Coefficient	% of Relative Importance	Rank
Financial Aid	1.783	25.24	1
Quality of Dorm Life	1.663	23.55	2
Quality of Education	1.428	20.22	3
Student/Faculty Relationships	1.141	16.16	4
Social Life	1.047	14.83	5

n = 138
Correlation coefficient value between observed and predicted scores = .43
Absolute Average Difference = 1.43

both groups, the most important set of attributes was financial aid and quality of dorm life. The relative importance values of financial aid and quality of dorm life for participants in sports were 25.68% and 23.69%, respectively. The corresponding values for the group who did not participate in sports were almost identical. The students who participated in sports placed the least significance on student-faculty relationships (13.61%). The students who did not participate in sports, however, placed the least amount of importance on social life (14.83%). The correlation coefficient values and absolute difference values for the two segments were similar to each other and the values for the total sample (see Tables 5 and 6).

The analyses of the attributes with the students segmented by the amount of parental influence on the university selected by the student produced relatively consistent results (see Tables 7, 8, and 9). For the students who had little parental influence, the relative importance figures for financial aid and quality of dorm life were 25.77% and 21.45%, respectively. The corresponding values for the students who experienced a large degree of parental influence were 26.44% and 23.98%. The group with a moderate amount of parental influence identified the same two attributes but reversed the order of importance. That is, quality of dorm life (25.65%) was rated slightly above financial aid (24.18%).

Summary of Results

The financial aid and quality of dorm life attributes comprised the most important set of attributes for the entire

Table 7

Conjoint Analysis for Degree of Parental Influence Groups

Characteristic	Average Regression Coefficient	% of Relative Importance	Rank
Financial Aid	1.799	25.77	1
Quality of Dorm Life	1.497	21.45	2
Quality of Education	1.461	20.93	3
Student/Faculty Relationships	1.138	16.30	4
Social Life	1.086	15.55	5

n = 96
Correlation coefficient value between observed and predicted scores = .40
Absolute Average Difference = 1.46

Table 8

Conjoint Analysis for Degree of Parental Influence Groups

Characteristic	Average Regression Coefficient	% of Relative Importance	Rank
Quality of Dorm Life	1.688	25.65	1
Financial Aid	1.591	24.18	2
Quality of Education	1.253	19.04	3
Social Life	1.065	16.18	4
Student/Faculty Relationships	0.984	14.95	5

n = 93
Correlation coefficient value between observed and predicted scores = .44
Absolute Average Difference = 1.43

Table 9

Conjoint Analysis for Degree of Parental Influence Groups

Characteristic	Average Regression Coefficient	% of Relative Importance	Rank
Financial Aid	1.816	26.44	1
Quality of Dorm Life	1.648	23.98	2
Quality of Education	1.244	18.12	3
Social Life	1.244	18.11	4
Student/Faculty Relationships	0.919	13.37	5

n = 83
Correlation coefficient value between observed and predicted scores = .46
Absolute Average Difference = 1.50

sample and the various segments (see Table 10). The quality of education attribute was rated as the third most important attribute by all the segments analyzed, and the social life and student/faculty relationships attributes were rated as less important by the students.

Since the correlation coefficients and absolute average difference values of approximately .43 and 1.45, respectively, indicate that the ability of the utility function to predict student ratings of various universities is marginally acceptable, one must be careful when using the results of the conjoint analyses generated in this study. Nevertheless, the implications of this preliminary study would indicate that Ashland University administrators must be concerned about the impact of implementing financial policies that would shift funding away from the financial aid and dorm life areas. These areas appear to be important in determining how desirable a university is to a student who elected to enroll at Ashland University.

Future Studies

Five changes will be implemented in a future study. First, academic support programs such as library, computer and laboratory facilities will be included as an additional attribute. Second, selected interaction effects between the attributes will be considered. Third, additional levels of certain attributes will be included. These additional levels will allow for the investigation of the possible existence of curvilinear relationships between an attribute and its ratings. Fourth, students who were accepted by

Table 10

Summary of Conjoint Ranks

	Frequency of Ranks in the 8 Analyses					Mode Rank
	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	
Financial Aid	6	2	0	0	0	1
Social Life	0	0	0	5	3	4
Quality of Campus Life	2	6	0	0	0	2
Student/Faculty Relationships	0	0	0	3	5	5
Quality of Education	0	0	8	0	0	3

Ashland University rather than only those who matriculated will be surveyed. Segmenting the students who matriculate from those students who do not matriculate and analyzing each segment would provide information on whether these groups rate the importance of attributes differently. And finally, the relationship between various financial aid packages and tuition price increases as it relates to matriculation decisions should be researched in greater detail.

Appendix A

Freshman Survey

In this survey we want you to determine which features of a college are important to you. When completing this survey form, consider the five following features:

1) **Financial aid package.** This feature would include the various grants, loans, scholarships, and work-study programs available which can help the student in covering the costs of attending college.

2) **Quality of campus life.** This feature refers to the dormitory living conditions and the quality of food in the cafeteria. The basic areas to consider are clean and spacious living conditions and the quality and variety of food served.

3) **Quality of education.** This feature refers to quality of teaching, career relevance of the curriculum, and general overall reputation of the college.

4) **Social life** on campus. This characteristic refers to the opportunity to meet and interact with other students on campus through various social mixers, dances, and other occasions.

5) **Student/faculty relationships.** This attribute involves the availability of faculty to students, the faculty promoting student development, and giving the students advice on personal as well as professional matters.

WHICH FEATURES ARE MOST IMPORTANT?

We would like to find out, with your help, which features of a college are more important to students. Listed below are descriptions of 10 colleges, each of which provides different amounts and combinations of five college features. Assume that all 10 colleges are equal in all other areas not mentioned.

Please rate these 10 colleges by using a 1 to 10 scale with "1" being not preferred at all and "10" being very much preferred. Try to use a range of numbers like 2, 3, 8, 9, etc. if the particular combination of college features falls somewhere between the two extreme values of 1 and 10.

EXAMPLE:	College	Quality of Education	Student/Faculty Interaction	Social Life	Financial Aid Package	Quality of Campus Life	Rating (1-10 scale)
	"X"	well-known reputation	extremely accessible	few social activities	all financial need is met	above expectations	____

COLLEGE						
	SOCIAL LIFE	QUALITY OF EDUCATION	STUDENT/FACULTY INTERACTION	QUALITY OF CAMPUS LIFE	FINANCIAL AID PACKAGE	RATING (1-10 SCALE)
"A"	few social activities	reputation not well known	faculty are accessible if sought	below my expectations	little financial need is met	____
	QUALITY OF CAMPUS LIFE	FINANCIAL AID PACKAGE	SOCIAL LIFE	QUALITY OF EDUCATION	STUDENT/FACULTY INTERACTION	
"B"	below my expectations	most financial need is met	many social activities	reputation well known	faculty are accessible if sought	____
	SOCIAL LIFE	QUALITY OF CAMPUS LIFE	FINANCIAL AID PACKAGE	STUDENT/FACULTY INTERACTION	QUALITY OF EDUCATION	
"C"	few social activities	above my expectations	most financial need is met	faculty are extremely accessible	reputation well known	____
	QUALITY OF EDUCATION	STUDENT/FACULTY INTERACTION	SOCIAL LIFE	FINANCIAL AID PACKAGE	QUALITY OF CAMPUS LIFE	
"D"	reputation not well known	faculty are extremely accessible	many social activities	little financial need is met	above my expectations	____

	SOCIAL LIFE	QUALITY OF EDUCATION	QUALITY OF CAMPUS LIFE	STUDENT/FACULTY INTERACTION	FINANCIAL AID PACKAGE	RATING (1-10 SCALE)
"E"	few social activities	reputation not well known	below my expectations	faculty are extremely accessible	most financial need is met	____
	QUALITY OF EDUCATION	STUDENT/FACULTY INTERACTION	FINANCIAL AID PACKAGE	QUALITY OF CAMPUS LIFE	SOCIAL LIFE	
"F"	reputation well known	faculty are extremely accessible	little financial need is met	below my expectations	many social activities	____
	FINANCIAL AID PACKAGE	QUALITY OF EDUCATION	QUALITY OF CAMPUS LIFE	SOCIAL LIFE	STUDENT/FACULTY INTERACTION	
"G"	little financial need is met	reputation well known	above my expectations	few social activities	faculty are accessible if sought	____
	STUDENT/FACULTY INTERACTION	FINANCIAL AID PACKAGE	QUALITY OF EDUCATION	QUALITY OF CAMPUS LIFE	SOCIAL LIFE	
"H"	faculty are accessible if sought	most financial need is met	reputation not well known	above my expectations	many social activities	____
	SOCIAL LIFE	FINANCIAL AID PACKAGE	QUALITY OF EDUCATION	STUDENT/FACULTY INTERACTION	QUALITY OF CAMPUS LIFE	
"I"	many social activities	little financial need is met	reputation well known	faculty are extremely accessible	above my expectations	____
	QUALITY OF EDUCATION	STUDENT/FACULTY INTERACTION	QUALITY OF CAMPUS LIFE	FINANCIAL AID PACKAGE	SOCIAL LIFE	
"J"	reputation well known	faculty are extremely accessible	below my expectations	most financial need is met	few social activities	____

What is your intended major field of study? _____

Are you:

_____ White/Caucasian
_____ American Indian
_____ Hispanic
_____ Black
_____ Other (Specify)
_____

Are you: _____ Male
or
_____ Female

Do you actively participate in any sports programs offered at Ashland College?

_____ Yes _____ No

On the scale from 1 to 10, circle the value that indicates the degree of influence your parents had on your decision to attend Ashland College.

Little Influence **Much Influence**

1 2 3 4 5 6 7 8 9 10

Please use the space below for any comments that you would like to make about campus life and activities that may not have been covered on this survey. We value any information that you can provide. **THANKS AGAIN FOR YOUR COOPERATION!**

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